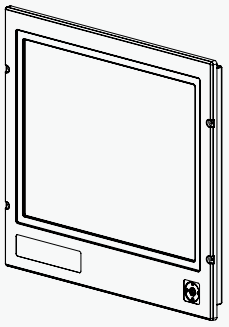
| | |
|---|---|
| Manufacturer: | **Hatteland Display AS** |
| Product: | **23.1 inch Maritime Multi Display (MMD)** |
| Type: | **JH 23T12 MMD-xxx-Axxx** |

| | |
|---|---|
| Last Revised: | **06 Feb 2008** |
| Revision#: | **04** |

# 23.1 inch Maritime Multi Display (MMD) - Series 1

## Features:

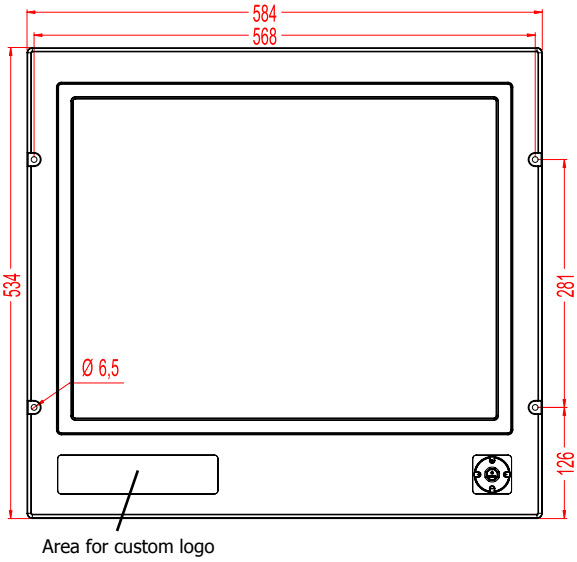


The Series 1 Maritime Multi Display (MMD) uses fewer cable connections than the previous generation, which increases reliability whilst reducing component costs. All MMD models feature future support for combined AC and DC power input built in, ensuring that they are compatible with all power systems on all vessels. These models will automatically switch to whatever power is connected, making them highly flexible for shipbuilders and system integrators alike. Connections include DVI-I in, RGB out, RGB in, IEC inlet, IEC outlet and USB I/O.

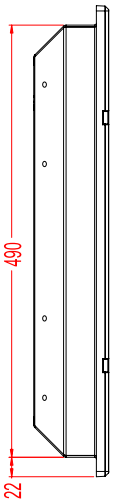
Signal input/output options can be increased upon request by using the HATTELAND® 160 pin I/O connector, which allows the connection of many common signal types through a single cable connection, for common signals such as; Composite Video Input, Touch Screen and Serial Communication.

ECDIS Compliant MMD models are also available. Further, all models and variations can be offered with Optical Technology bonding that mitigates screen misting.

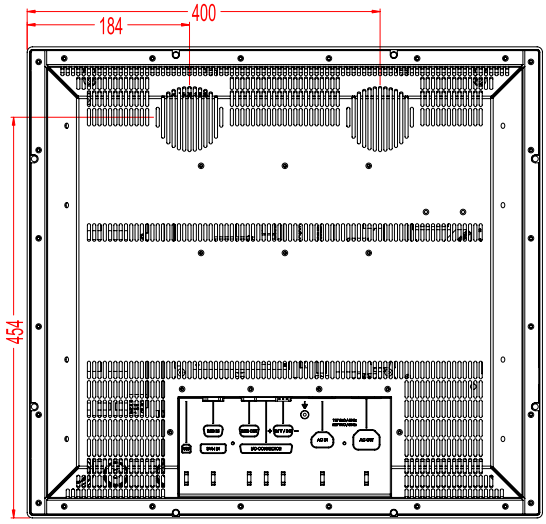
### FRONT VIEW



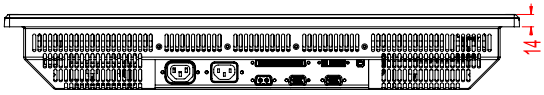

### SIDE VIEW



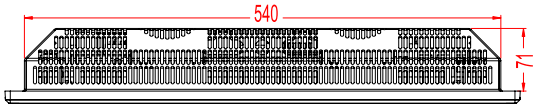

### BACK VIEW

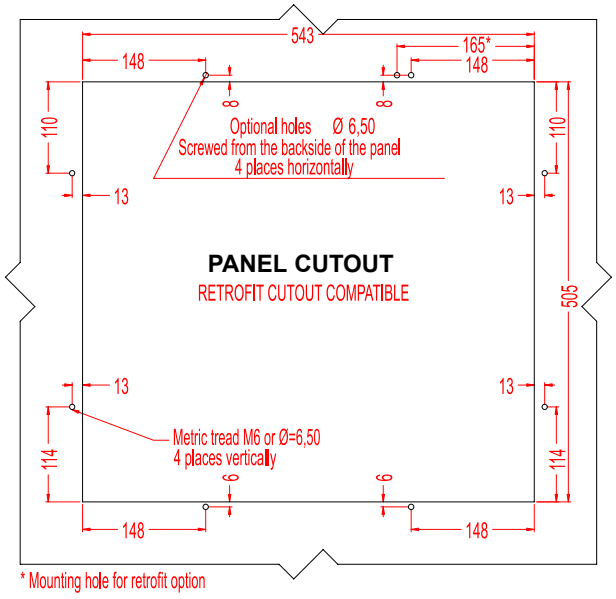



### BOTTOM VIEW




### TOP VIEW




Dimensions might be shown with or without decimals. Tolerance on drawings is +/- 1mm. For accurate measurements, use relevant DWG file available from Hatteland Display AS

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# PRODUCT SPECIFICATIONS - JH 23T12 MMD-xxx-Axxx

HATTELAND®

*Note: All specifications are subject to change without prior notice!*

## TFT Technology:

- High Quality FUJITSU TFT
- 23.1 inch viewable image size
- Active Matrix, Thin Film Transistor (TFT)
- MVA (Multi-domain Vertical Alignment) LCD Technology

## TFT Characteristics:

- Pixel Number : 1600 x 1200
- Pixel Pitch (RGB) : 0.294 (H) x 0.294 (V) mm
- Response Time : 10 ms (typical)
- Contrast Ratio : 500:1 (typical)
- Light Intensity : 250 cd/m2 (typical)
- Viewable Angle : +/- 85 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 470.4 (H) x 352.8 (V) mm
- Max Colors : 16.7 millions

## Synchronisation:

**Sync Signal:**
- Digital separate synchronisation
- Composite synchronisation
- Synchronisation on green.
- Auto detects VGA -> UXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

**Synchronisation Range:**
- Horizontal : 31,5 kHz to 91,1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimum picture quality*

## Supported Signals:

**Resolutions:**
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768
- SXGA : 1280 x 1024
- UXGA : 1600 x 1200*

** Recommended for optimum picture quality. (60 Hz only)*

**Video Signals:**
- Interlaced NTSC and PAL/SECAM video
- Composite video

## Power Specifications:

**Power Supply:**
- 115 & 230VAC - 50 / 60Hz - JH 23T12 MMD-Axx-xxxx
- 115 & 230VAC - 50 / 60Hz + 24 VDC - JH 23T12 MMD-Mxx-xxxx*

** To be introduced Q3 2008*

**Power Consumption:**
Operating : TBD

## Typical Type Numbers:

- JH 23T12 MMD-AA1-AAAA = Standard version AC
- JH 23T12 MMD-AA1-AAAC = Standard version AC & Capacitive Touch Screen*
- JH 23T12 MMD-MA1-AAAR = Standard ver. AC/DC & Resistive Touch Screen*
- JH 23T12 MMD-AA1-AOBA = Standard version AC, Bonded & Potmeter Controls

- For a full overview, please review our typenumber sheet found on our website:
http://www.hatteland-display.com/pdf/misc/ind100780-1_series1redesign_typenumber_desc.pdf

**Note that all 23 inch with touch screens are by factory default delivered with bonding. This is due to the physical size of the touch screen and to ensure stability.*

## Physical Considerations:

- 584 (W) x 534 (H) x 85 (D) mm - Weight: 20 kg (approx)

## Signal Terminals:

- DVI-I Signal IN : 1 x 29p DVI Female (or as RGB IN with adapter)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- RGB Signal OUT : 1 x 15p HD D-SUB (female) - Clone of RGB IN**
- HATTELAND® I/O : 1 x 160p D-SUB (female) - Also see table below
- USB I/O : 1 x TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- AC Power OUT : 1 x Std IEC Outlet
- DC Power IN : 1 x 2p D-SUB Connector (male) - Amphenol FCC17

**Tested at recommended resolutions. The RGB output signal is at same resolution and sync as the RGB input. The output is working even if the display unit is turned off, but power cable/supply must be connected/provided.

## HATTELAND® I/O Cable:

The factory standard HATTELAND® I/O cable is delivered with the following connectors. 2 Standard cables are defined. Standard cable length is 30cm.

| | | |
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| **#1** | • COM1 | : 1 x 9p D-SUB (female) - RS232 |
| | • Composite Video IN | : 3 x BNC (female) |

| | | |
|---|---|---|
| **#2** | • COM1 | : 1 x 9p D-SUB (female) - RS232 |
| | • Composite Video IN | : 3 x BNC (female) |
| | • COM Touch | : 1 x 9p D-SUB (female) - For touch screen |

Customized I/O Cables are possible to support more built-in signals, like: RS-232, RS-485, RS-422/RS-485, Buzzer, Radar Reset, Touch (RS-232 or PS/2), 1 x S-Video IN, 3 x Composite Video IN, Remote External User Controls, Alternative Keypad interface (i2c) and reserved for other signals. Custom cable lengths can be manufactured.

## User Controls:

**On front bezel - Button control (IP66) xxx-xxAx models:**
- Power On/Off and On Screen Display Menu (push button)
- Brightness Control (up/down - push buttons)
- Hotkeys (left/right - push buttons)
- Mode Status Red/Green Illuminated LED-Ring Indicator

**On front bezel - Retractable Potmeter (IP66) xxx-xxBx models:**
- Power On/Off and On Screen Display Menu (push button)
- Brightness Control (rotary control)
- Hotkeys (left/right - push buttons)
- Mode Status Red/Green Illuminated LED-Ring Indicator
- Speaker
- To be introduced Q2 2008

## Environmental Considerations:

- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity 30% to 90% (non condensing)
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity 10% to 90% (non condensing)
- IP Rating : EN60529 (IP66) (Applies for flush mount)
- Compass Safe Dist. : JH23T12MMD-xxx-xxxx - Std: TBD Steering: TBD

**Safety Considerations:**
*Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.*

## Available Accessories:

- JH 23TBR T01-A1 = Bracket (Review bracket datasheet/user manual)
- JH MMDROSTD-A1= Rotary Bracket (Review bracket datasheet/manual)
- JH 23TSV STD-A1 = Sun Visor (Review user manual)
- JH VESA 23T01-A1= Vesa Bracket (Review user manual)
- JH 23TWC STD-B1= Water Cover (Review user manual)

## Factory Mounted Options:

- Resistive or Capacitive Touch Screen

# TESTING / APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

**EN60945 4th** (IEC945 4th)
**DNV** - Det Norske Veritas (pending)
**BV** - Bureau Veritas (pending)
**ClassNK** - Nippon Kaiji Kyokai (pending)
**ABS** - American Bureau of Shipping (pending)
**GL** - Germanischer Lloyd (pending)
**LRS** - Lloyd's Register of Shipping (pending)